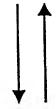
FIG.1

[SEQ. ID NO: 3] X-C-C-T-T-G-A-G-A-T-T-T-C-C-C-T-C

G-G-A-A-C-T-C-T-A-A-G-G-G-A-G-X
[SEQ. ID NO: 4]



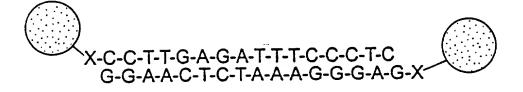


FIG.2

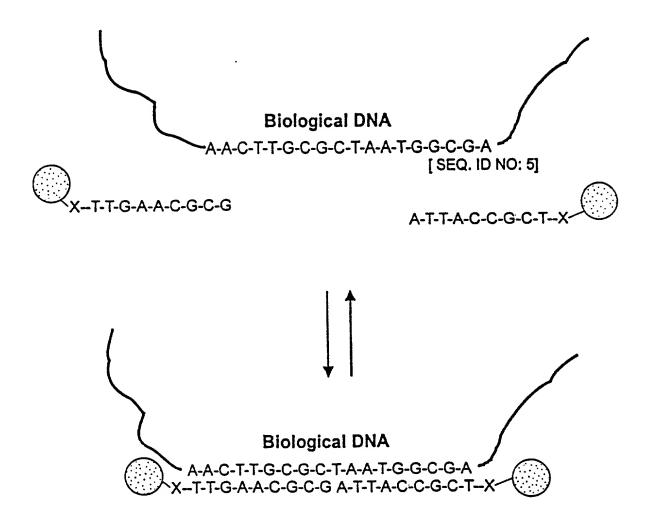
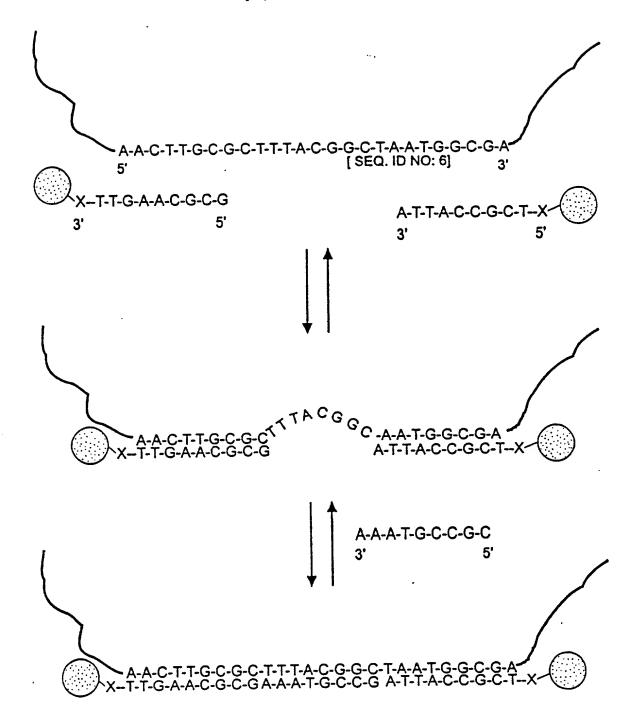
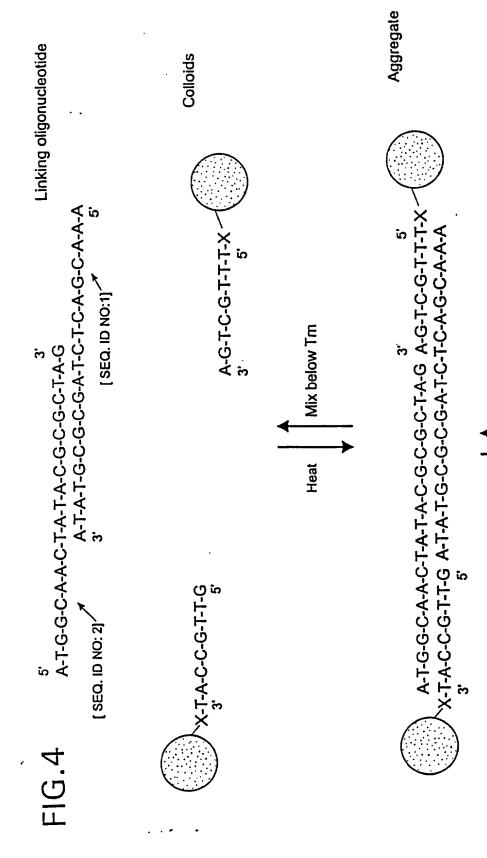


FIG.3





Precipitate (formed by further cross-linking)

Stand below Tm

Heat

FIG.5

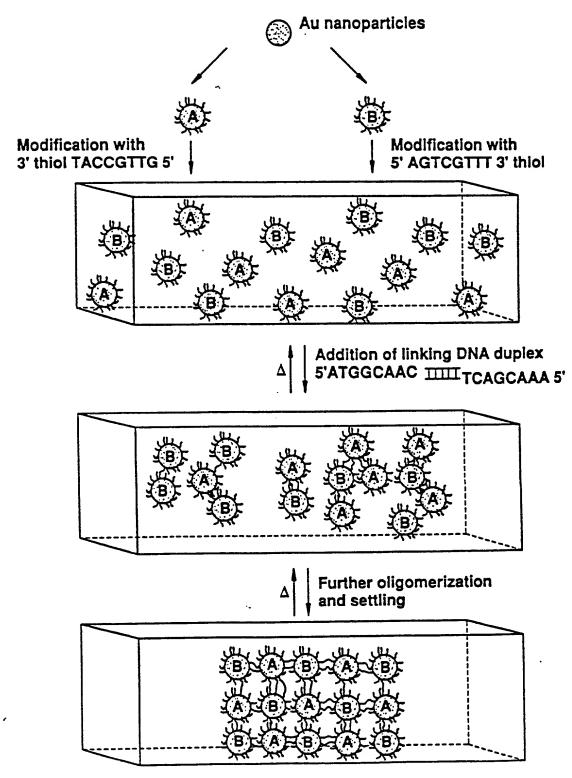
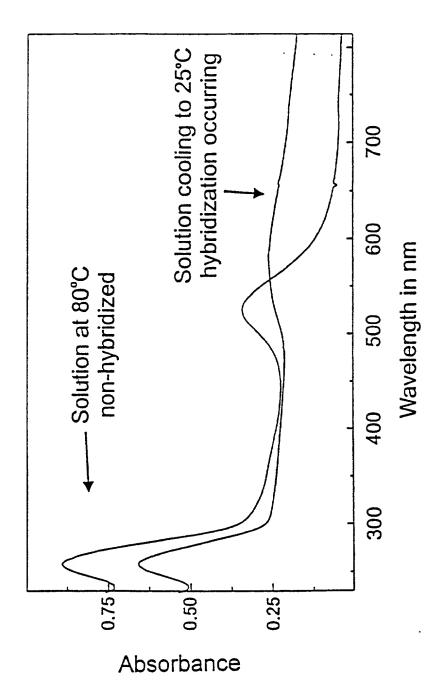




FIG.6A FIG.6B FIG.6C

FIG. 7



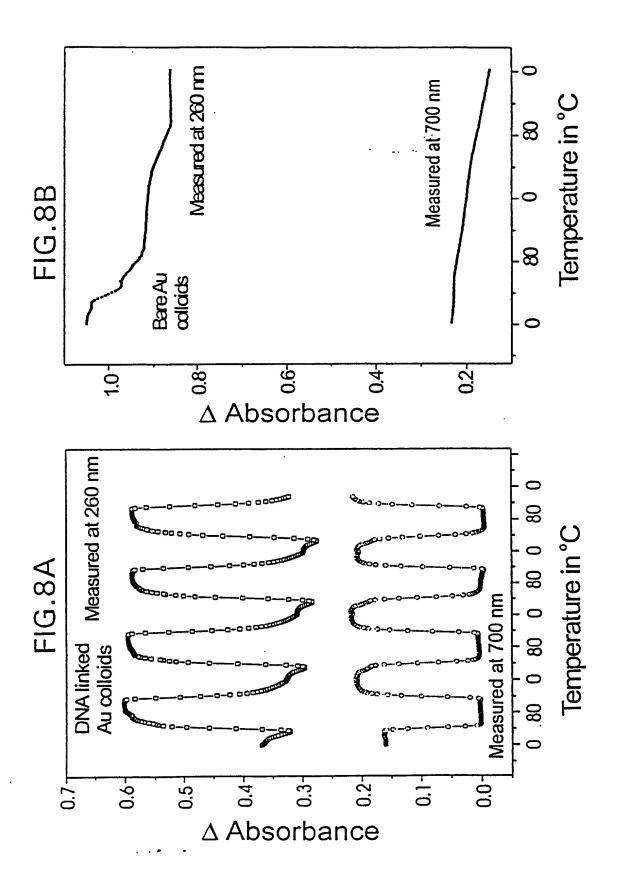




FIG.9A

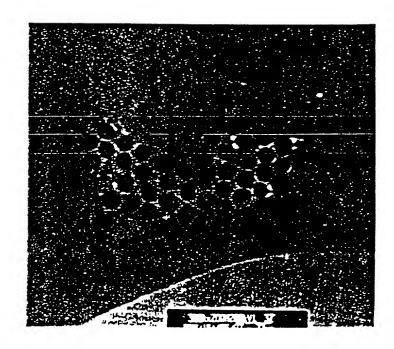
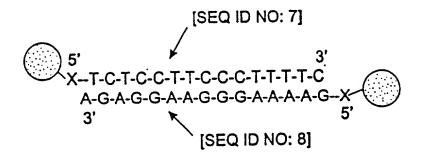
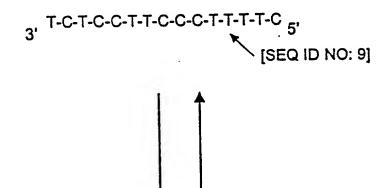


FIG.9B

FIG.10





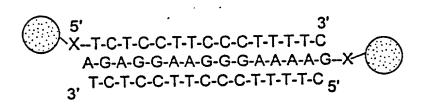


FIG. 11

[SEQ. ID NO: 10] *-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G-A-G-T-C-G-T-T-T-3' 

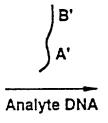
T-A-C-C-G-T-T-G-A-T-A-T-G-C-G-C-G-A-T-C-T-C-A-G-C-A-A--S-'s-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G-A-G-T-C-G-T-T-T

FIG.12A Complementary Target [SEQ. ID NO: 14] [SEQ. ID NO:12] 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C FIG.12B [SEQ. ID NO:13] Probes without Target 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G FIG.12C Half Complementary Target 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A[T-G-G-C]A[A-C-T-A-T-A]C-G-C [SEQ. ID NO: 15] FIG.12D Target - 6 bp 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G 5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C [SEQ. ID NO:16] FIG.12E One bp Mismatch 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G 5' A-G-C-A-T-G-G-T-TG-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C SEQ. ID NO: 17] FIG.12F Two bp Mismatch 3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G 5' A-G-C-A-T-G①T①G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C -[SEQ. ID NO: 18]

FIG.13A

transparent substrate

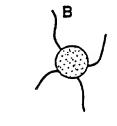
Modified DNA chemisorbed onto solid substrate



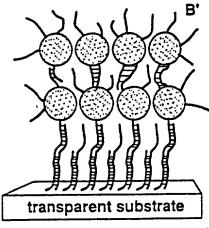
transparent substrate

Analyte DNA hybridized onto substrate

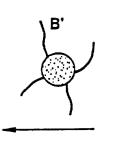
DNA modified colloids



В

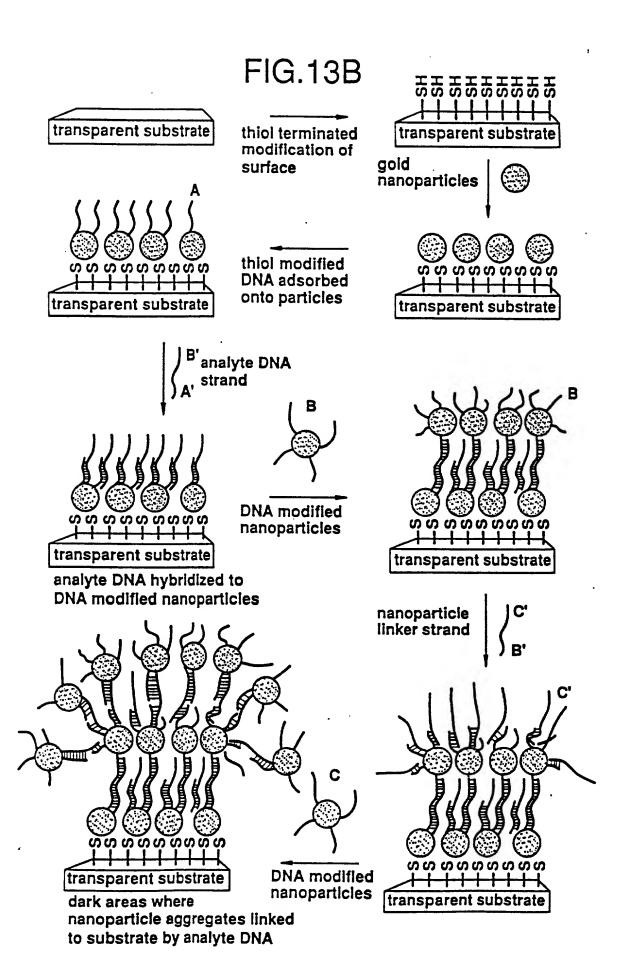


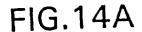
Dark areas where nanoparticle aggregates are linked to substrate surface by analyte DNA



transparent substrate

DNA modified colloids
hybridized to bound
analyte DNA





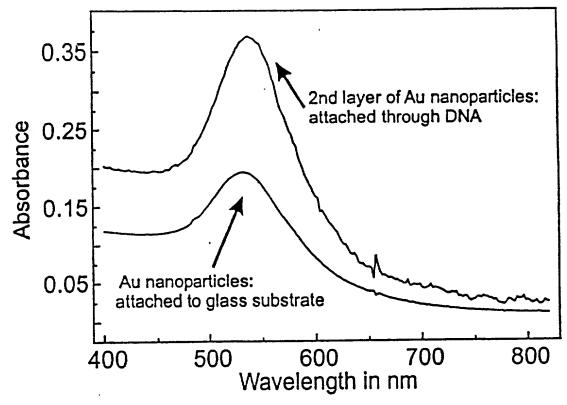


FIG.14B

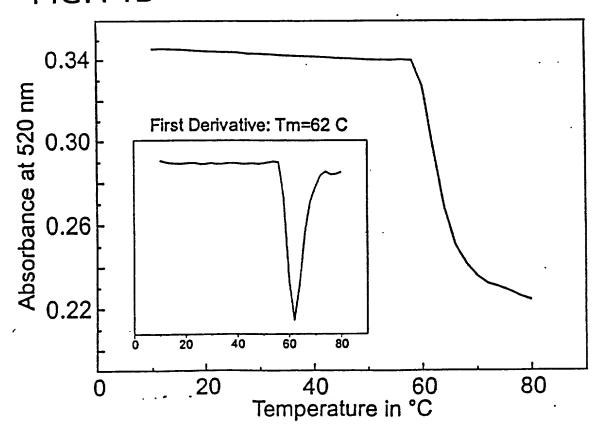


FIG15A
Probes with No Target SEQ ID NO:19
SEQ ID NO:20
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
FIG15B
Half-Complementary Target 3 SEQ ID NO:21
5' TAC-GAG-TTG-AGA-GAG-TGC-CCA-CAT 3'
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
1 2
FIG15C
Complementary Target Tm=53.5°C
SEQ ID NO:22
5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3' S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
1 2
FIG15D
ONE Base-Pair Mismatch at Probe Head Tm=50.4°C
5 SEQ ID NO:23
5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GC <u>T</u> 3'
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
FIG15E Tm=46.2°C
ONE Base-Pair Mismatch at Probe Tail
<u>6</u> SEQ ID NO:24 5' TAC-GAG-TTG-AGA-CTC-CTG-AAT-GCG 3'
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
<u>1</u> 2
FIG15F Tm=51.6°C
ONE Base Deletion 7 SEQ ID NO:25
5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GC□3'
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
FIG15G
ONE Base-Pair Insertion Tm=50.2°C
5' TAC-GAG-TTG-AGA-CAT-CCT-GAA-TGC-G 3'
S-ATG-CTC-AAC-TCT TA-GGA-CTT-ACG-C-S

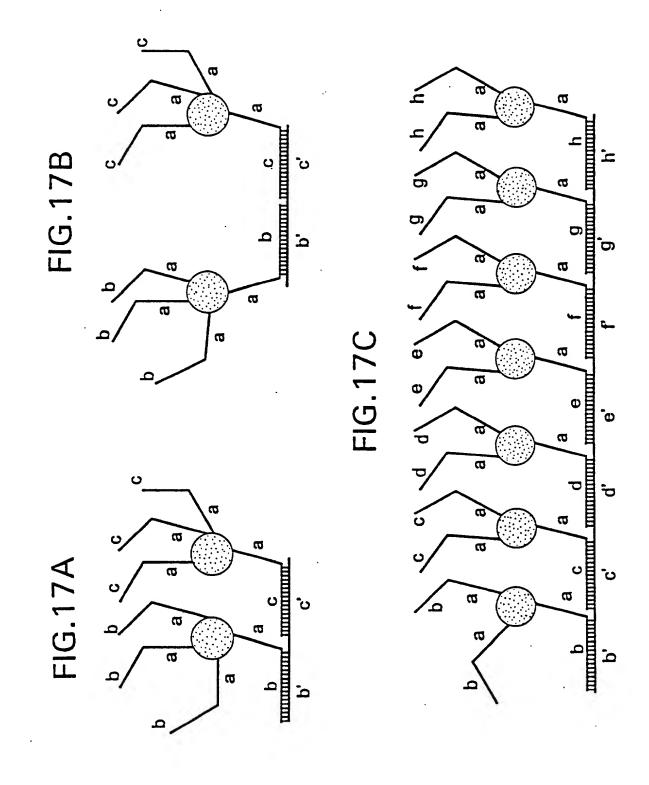
FIG. 16A 24 Base Template

48 Base Template with Complementary 24 Base Filler FIG. 16B

_S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S 5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'

72 Base Template with Complementary 48 Base Filler FIG.16C

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3' S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S -





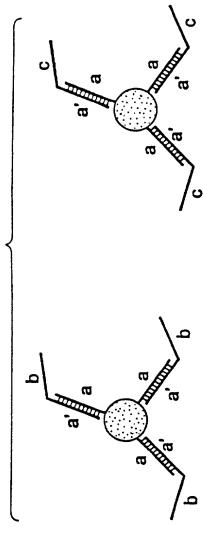
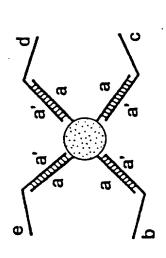


FIG.17E



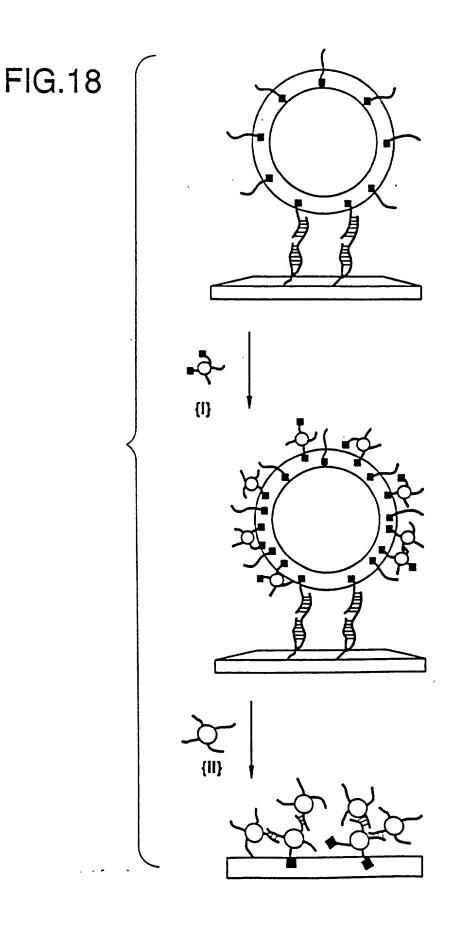


FIG.19A

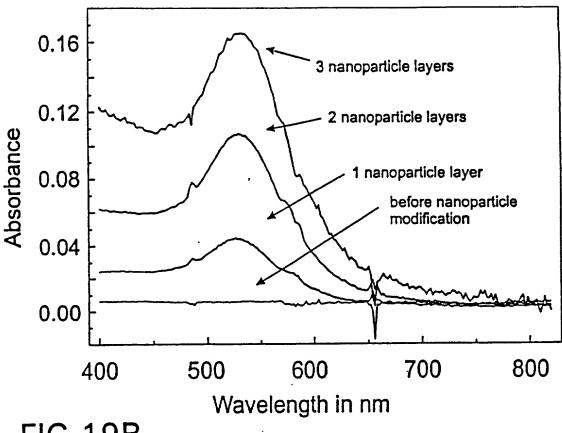
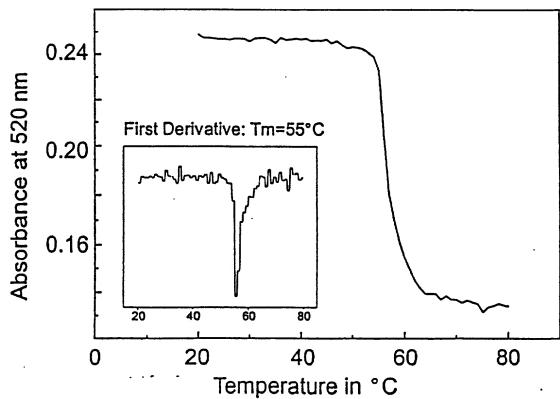
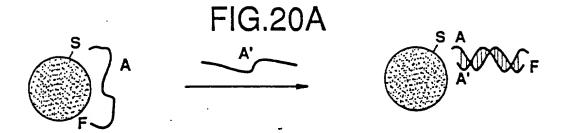
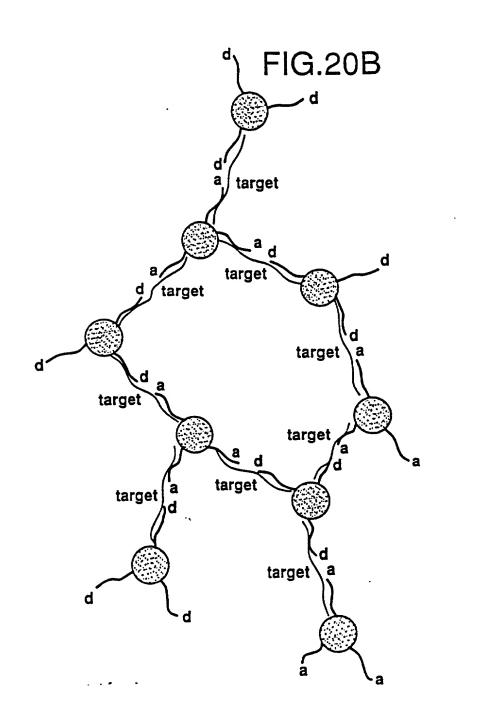


FIG.19B







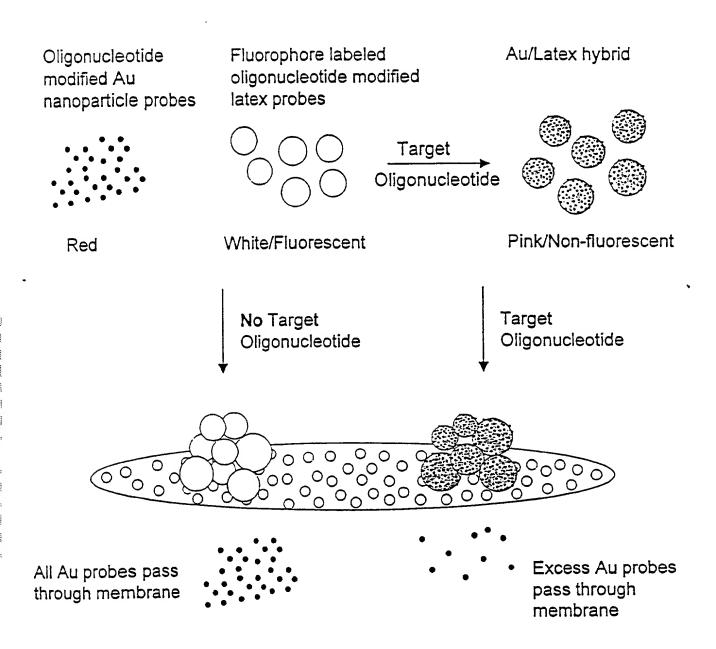
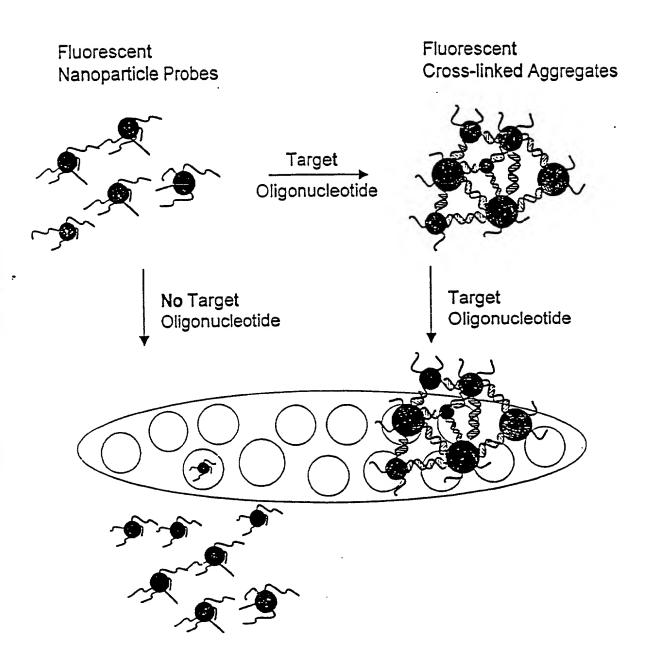


FIGURE 21



The fluorescent nanoparticle probes pass through the membrane

The fluorescent cross-linked aggregates are retained by the membrane

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT 3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA ĞTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3' TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrex PCR product [SEQ 10 D0:36]

3' CTC CCT AAT AAC AAT-

[SEQ 10 NO:37]

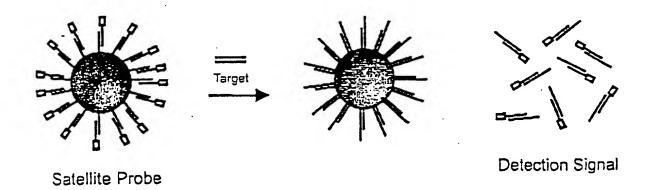
3' TTA TAA CTA TTC CTA ID NO', 38]

Oligonucleotide-Nanoparticle Probes

Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT [SEQ 1D NO:39]
3' A TCT CTT CAT TAA TTA AGC AGT TGT [SEQ 1D NO:40]
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT [SEQ 1D NO:41]
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA [SEQ 1D NO:42]

FIGURE 23



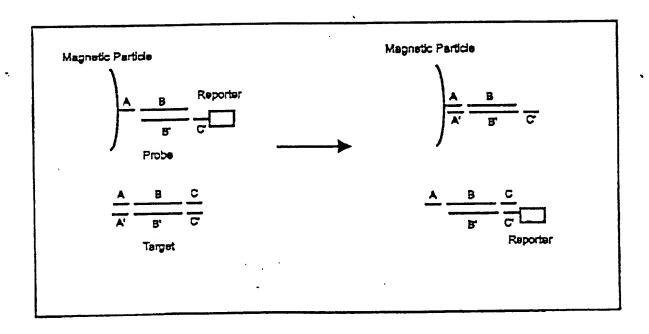
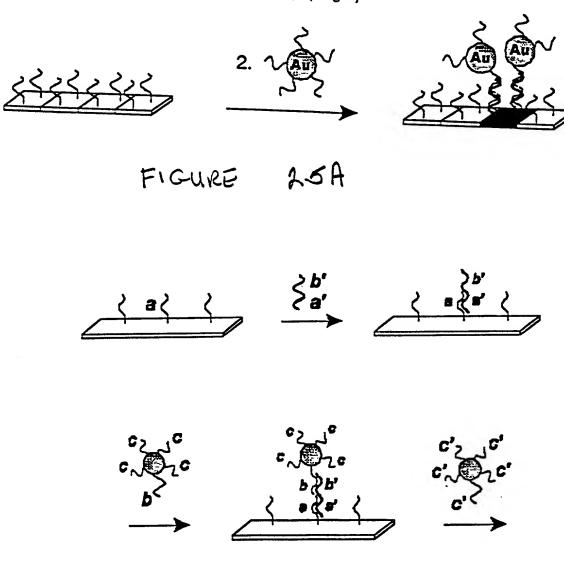


FIGURE 24

1. **(**target)



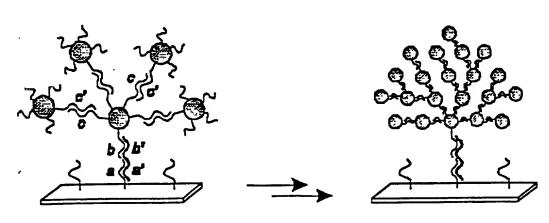


FIGURE 25 B

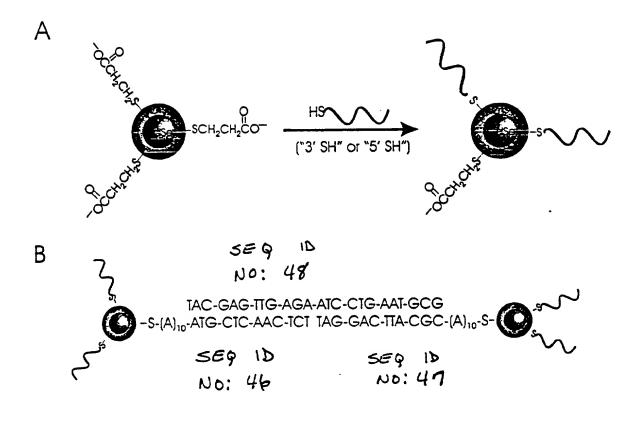


FIGURE 26

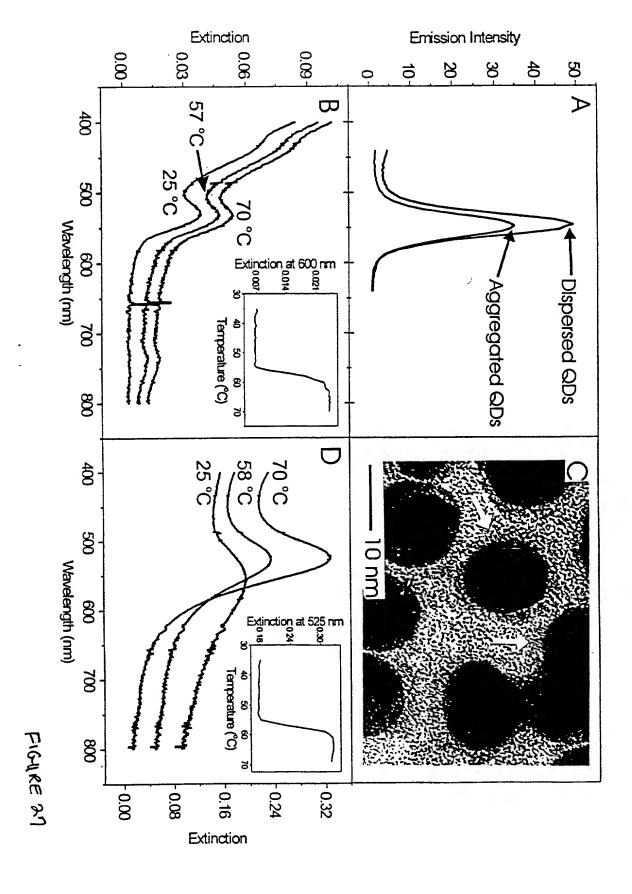
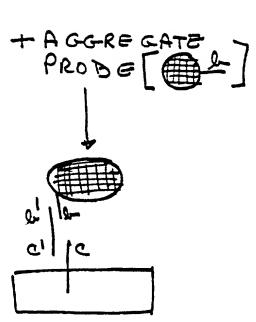
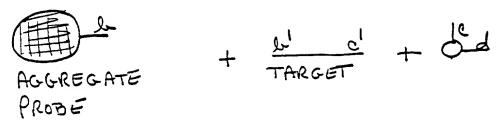


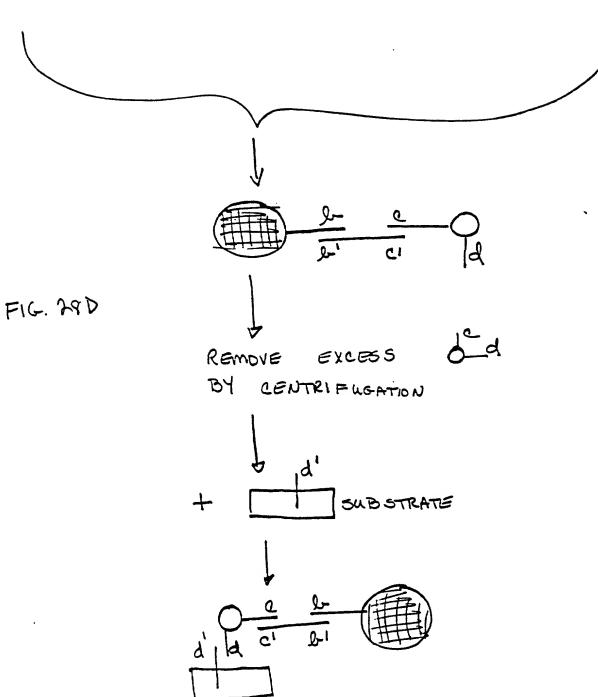
FIGURE Z8A

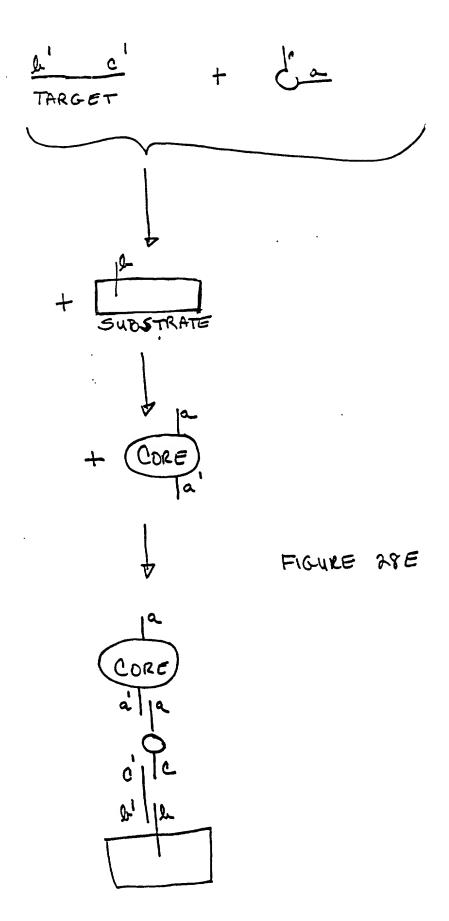
FIGURE AS B

FIG. 28C









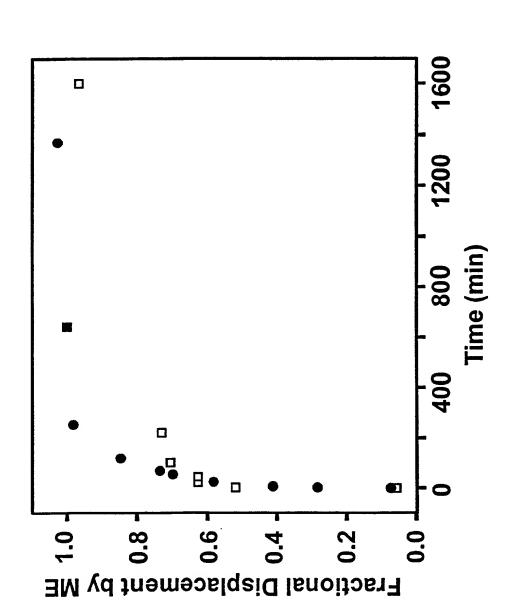
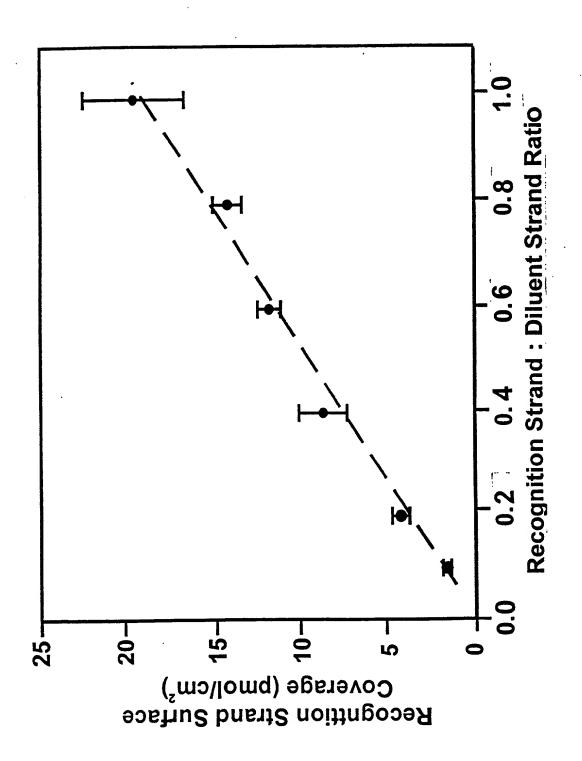
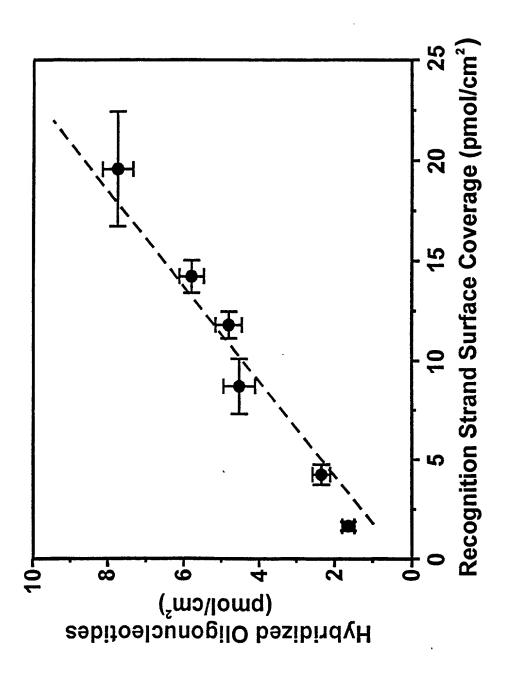


Figure 29





[SEQ ID NO:56] 5' GGA TTA TTG TTA---AAT ATT GAT AAG GAT 3' CCT ANT AAC AAT TTA TAA CTA TTC CTA [SEQ ID NO:57] [SEQ ID NO:58] N = A (complementary),

N = A (complementary), G,C,T (mismatched)

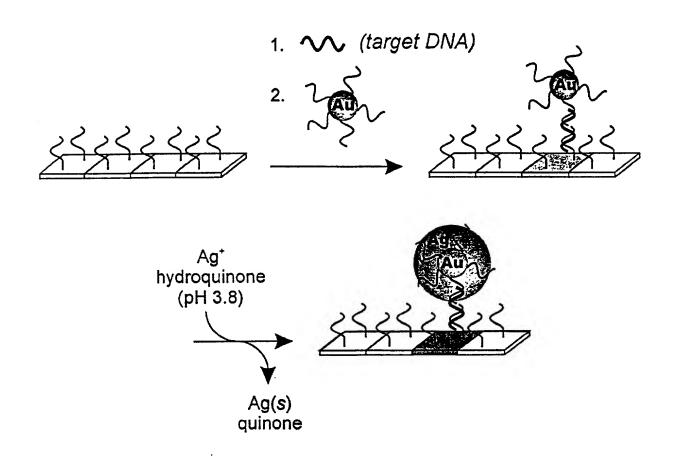


Figure 32

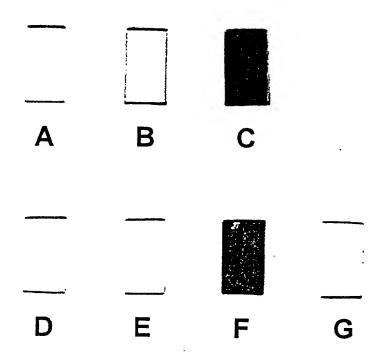


Figure 33

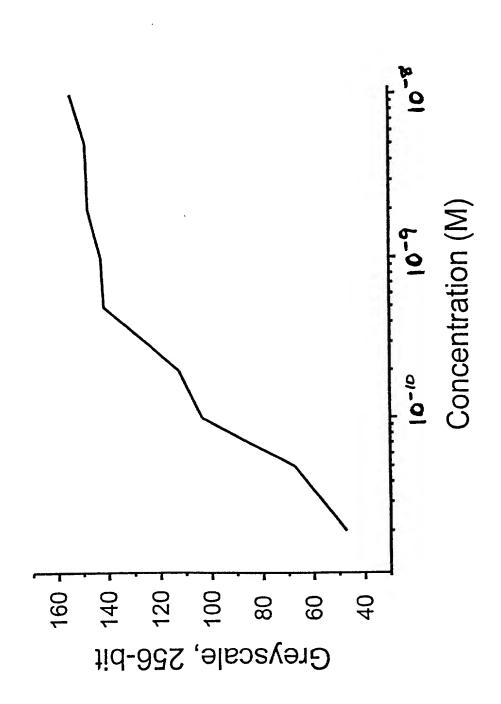


Figure 34

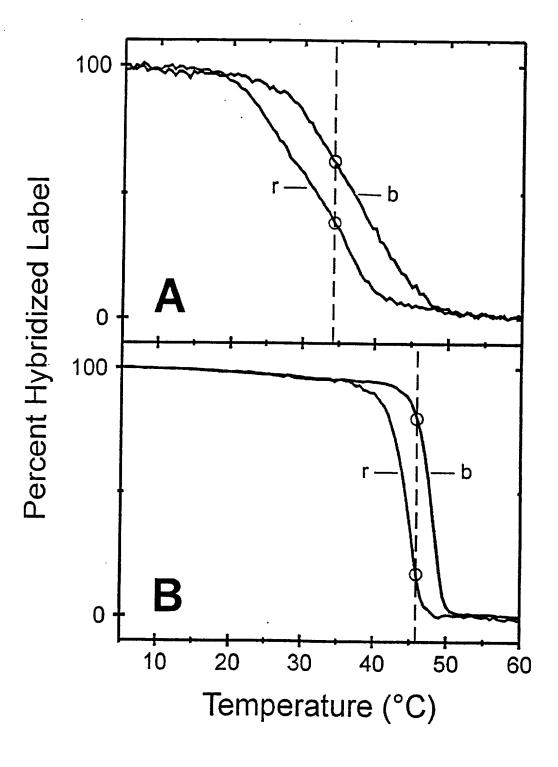
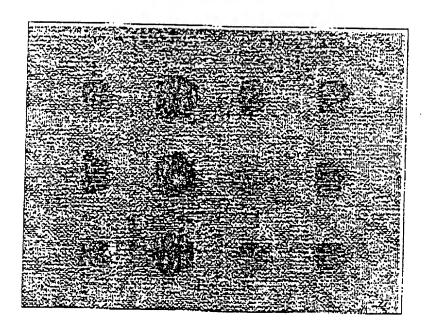
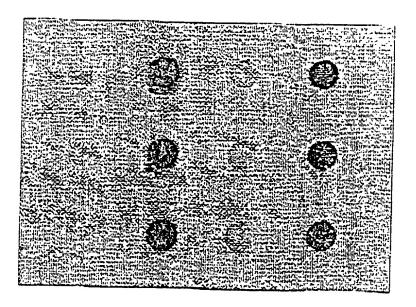


Figure 35

Fig. 360



F16.36B



C 🛕 T G

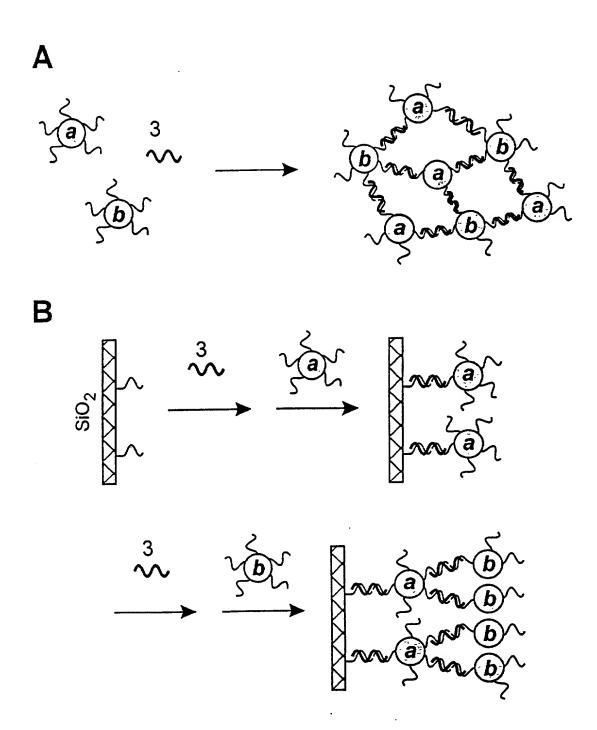


Figure 37

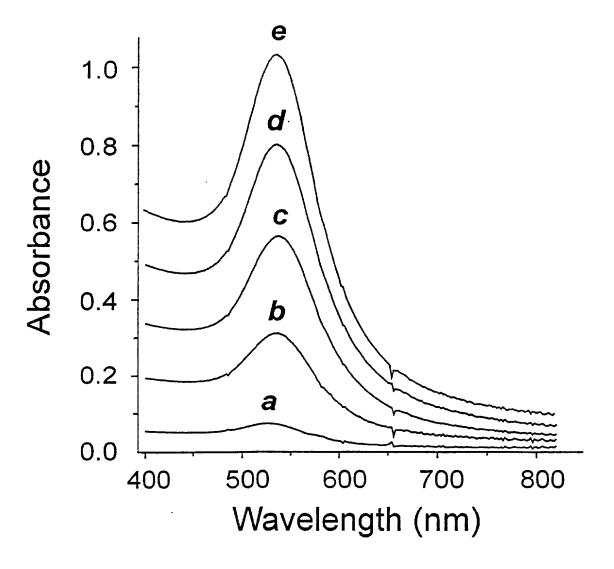


Figure 38A

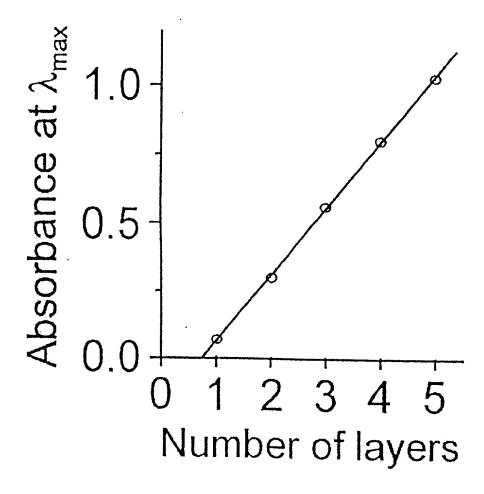


Figure 38B

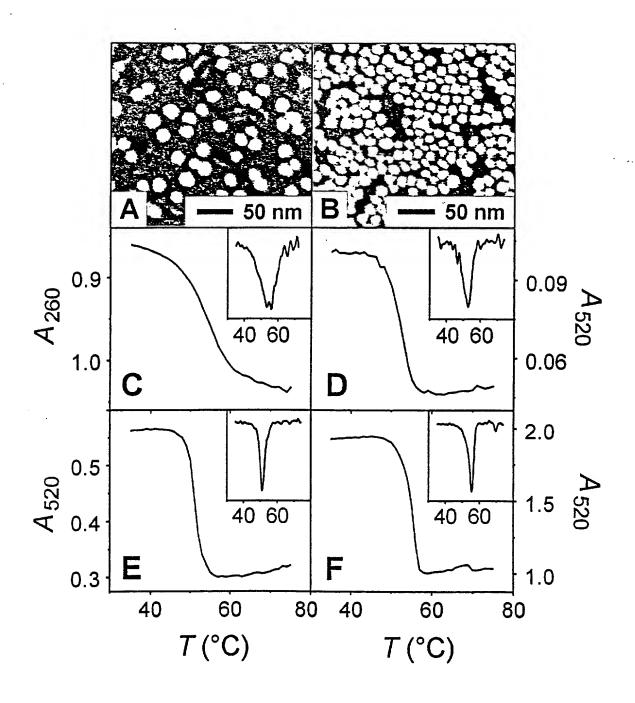
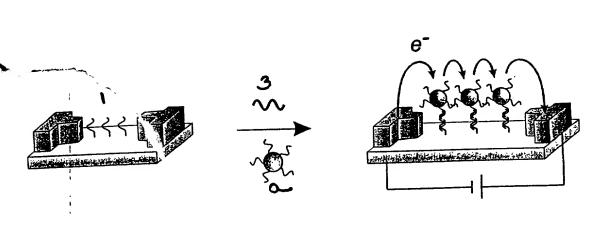


Figure 39



174111

FIG. 41